Space Weather Forecast

Issued on Tuesday 18 February 2025 at 00:38 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate flares likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate, with one moderate-class flare observed from a sunspot near the west limb. There are eleven regions currently on the visible disc, however these are all relatively small and simple. The most complex located, just west of south-centre disc and also approaching the west limb, however these have remained relatively stable. The most significant growth has been in the east disc, with the development of a couple of sunspots in the northeast and also a further couple in the southeast. However, any growth has been relatively limited.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: Solar wind speeds were elevated, near 550km/s, but eased to slightly elevated levels, currently near 450km/s. This was due to Earth gradually moving out of the faster solar winds from a coronal hole. Total Interplanetary Magnetic Field remained weak throughout, with its north-south component also weak and variable in direction. Geomagnetic activity was Quiet to Unsettled (Kp 2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background levels, with no Solar Radiation Storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Moderate, with isolated Moderate class flares likely.

Solar Wind / Geomagnetic Activity: There are no CMEs currently assessed as Earth-directed, however a couple of weak ejections from 14-15 Feb may pass nearby, with glancing influences possible day 1 (18 Feb). Otherwise, Elevated solar winds are expected to be gradually easing to near Background. Geomagnetic activity will be Quiet to Unsettled at first with a chance of Active intervals, and a slight chance of G1 Minor Storms, if any CME arrival occurs. This easing to be mainly Quiet with isolated Unsettled intervals by day 2 (19 Feb).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background levels, with no Solar Radiation Storms occurring. However

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there is a slightly increased chance of proton flux rising as the current sunspot regions move into or closer to the western disc, as proton events are more likely to be observed from this location.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	50	60	60	60
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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